

# EXPERIMENTAL RESEARCHES IN ELECTRICITY

## § I. IDENTITY OF ELECTRICITIES DERIVED FROM DIFFERENT SOURCES. § 2. RELATION BY MEASURE OF COMMON AND VOLTAIC ELECTRICITY

### § i. *Identity of Electricities derived from different sources*

i. THE progress of the electrical researches which I have had the honour to present to the Royal Society, brought me to a point at which it was essential for the further prosecution of my inquiries that no doubt should remain of the identity or distinction of electricities excited by different means. It is perfectly true that Cavendish,<sup>2</sup> Wollaston,<sup>3</sup> Colladon<sup>4</sup> and others, have in succession removed some of the greatest objections to the acknowledgment of the identity of common, animal and voltaic electricity, and I believe that most philosophers consider these electricities as really the same. But on the other hand it is also true, that the accuracy of Wollaston's experiments has been denied;<sup>5</sup> and also that one of them, which really is no proper proof of chemical decomposition by common electricity (45, 63), has been that selected by several experimenters as the test of chemical action (72, 82). It is a fact, too, that many philosophers are still drawing distinctions between the electricities from different sources; or at least doubting whether their identity is proved. Sir Humphry Davy, for instance, in his paper on the Torpedo,<sup>6</sup> thought it

<sup>1</sup> Third Series, original edition, vol. i. p. 76.

<sup>2</sup> *Phil. Trans.* 1776, p. 196. <sup>3</sup> *Ibid.* 1801, p. 434.

<sup>4</sup> *Annales de Chimie*, 1826, p. 62, etc. <sup>5</sup> *Phil. Trans.*

1832, p. 282, note.

<sup>6</sup> *Phil. Trans.* 1829, p. 17. "Common electricity is excited upon non-conductors, and is readily carried off by conductors and imperfect conductors. Voltaic electricity is excited upon combinations of perfect and imperfect conductors, and is only transmitted by perfect conductors or imperfect conductors of the best kind. Magnetism, if it be a form of electricity, belongs only to perfect conductors; and, in its modifications, to a peculiar class of them." (Dr. Ritchie has shown this is not the case, *Phil. Trans.* 1832, p. 294.) "Animal electricity resides only in the imperfect conductors forming the organs of living animals, etc."